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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/611,901 | KAMIJOH, MASAHIKO | |
| | Examiner | Art Unit | |
| | Thomas A. Morrison | 3653 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *27 April 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,3,5,10,12,14 and 15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5,10,12,14 and 15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/2/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0036377 (Togashi) in view of the website http://www.sdplastics.com/polyeth.html (dated January 21, 1997).

Regarding claim 1, Figs. 11-13 and 53 of Togashi show an image forming apparatus (30), including

an image forming section (near 35); and

a sheet feed apparatus (near 4) aligned to feed a sheet to the image forming section (near 35) and having

a sheet feed roller (4) in pressing contact with an uppermost sheet of a plurality of sheets, and

a tilt member (including 6 and 9 in Figs. 11-13) opposing the sheet feed roller (4), the tilt member (including 6 and 9) including

a tilt member main body (6);

a contact face (9b) in pressing contact with the sheet feed roller (4), and

a tilt face (9a) in contact with an edge of the uppermost sheet.

Moreover, Togashi discloses that the tilt face (9a) and the contact face (9b) are made of a first material (numbered paragraph [0108]) and the tilt member main body is made of a second material (numbered paragraph [0102]) different from the first material. More specifically, Fig. 13 and numbered paragraphs [0114]-[0115] of Togashi provide a general teaching of the advantages of using a different material (e.g., metal) in the region where the contact face and the tilt face are located than the rest of the tilt member (synthetic resin), because this region is **susceptible to abrasion**. However, Togashi does not explicitly disclose that the tilt face (9a) and the contact face (9b) are made of a first material consisting of one of PE and PBT, as claimed.

Regarding claims 1 and 3, the website http://www.sdplastics.com/polyeth.html (dated January 21, 1997) discloses that high density polyethylene is an excellent **abrasion resistant** product preventing gouging, scuffing and scraping. See enclosed printout of this website. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide PE plastic rather than the metal disclosed in Togashi in the region of the tilt face and the contact face, because plastic is a well known substitute for reducing manufacturing cost. Moreover, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use PE plastic as the different material in the region of the tilt face and the contact face to achieve excellent abrasion resistance, as taught by the website http://www.sdplastics.com/polyeth.html (dated January 21, 1997). Thus, all of the limitations of claims 1 and 3 are met.

2. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0036377 (Togashi) in view of The article entitled "Application of Engineering Plastic Materials to Office Automation and Audio-Visual Appliances in Japan".

Regarding claim 1, Figs. 11-13 and 53 of Togashi show an image forming apparatus (30), including

an image forming section (near 35); and

a sheet feed apparatus (near 4) aligned to feed a sheet to the image forming section (near 35) and having

a sheet feed roller (4) in pressing contact with an uppermost sheet of a plurality of sheets, and

a tilt member (including 6 and 9 in Figs. 11-13) opposing the sheet feed roller (4), the tilt member (including 6 and 9) including

a tilt member main body (6);

a contact face (9b) in pressing contact with the sheet feed roller (4), and

a tilt face (9a) in contact with an edge of the uppermost sheet.

Moreover, Togashi discloses that the tilt face (9a) and the contact face (9b) are made of a first material (numbered paragraph [0108]) and the tilt member main body is made of a second material (numbered paragraph [0102]) different from the first material. More specifically, Fig. 13 and numbered paragraphs [0114]-[0115] of Togashi provide a general teaching of the advantages of using a different material (e.g., metal) in the region where the contact face and the tilt face are located than the rest of the tilt

member (synthetic resin), because this region is **susceptible to abrasion**. However, Togashi does not explicitly disclose that the tilt face (9a) and the contact face (9b) are made of a first material consisting of one of PE and PBT, as claimed.

Regarding claims 1 and 5, the article entitled "Application of Engineering Plastic Materials to Office Automation and Audio-Visual Appliances in Japan" explains the use of PBT in office automation (e.g., printers), and explains that PBT is suitable for injection molding and has **large abrasion resistance** and low friction resistance. See Introduction on page 5 and pages 8-9 of this article. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide plastic rather than the metal disclosed in Togashi in the region of the tilt face and the contact face, because plastic is a well known substitute for reducing manufacturing cost. Moreover, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use PBT plastic as the different material in the region of the tilt face and the contact face to achieve large abrasion resistance, as taught by the article entitled "Application of Engineering Plastic Materials to Office Automation and Audio-Visual Appliances in Japan". Thus, all of the limitations of claims 1 and 5 are met.

3. Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0036377 (Togashi) in view of the website http://www.craftechind.com/material.htm (dated January 20, 1998), and further in view of the article entitled "Application of Engineering Plastic Materials to Office Automation and Audio-Visual Appliances in Japan".

Regarding claim 10, Figs. 11-13 and 53 of Togashi show a sheet feed apparatus (30), including

a sheet feed roller (4) in pressing contact with an uppermost sheet of a plurality of sheets; and

a tilt member (including 6 and 9) opposing the sheet feed roller (4), the tilt member (including 6 and 9) including

a tilt part (9), and

a support part (6), the tilt part (9) including

a contact face (9b) in direct contact (see e.g., Fig. 12) with the sheet feed roller (4), and

a tilt face (9a) in contact with an edge of the uppermost sheet.

Also, Togashi discloses that the tilt part (9) comprises a first material (numbered paragraph [0108]) and the support part (6) comprises a second material (numbered paragraph [0102]) different from the first material. More specifically, Fig. 13 and numbered paragraphs [0114]-[0115] of Togashi provide a general teaching of the advantages of using a different material (e.g., **metal**) in the region where the tilt part (9) than the support part (6) (synthetic resin), because the tilt part is susceptible to abrasion. However, Togashi does not explicitly disclose that the tilt part (9) comprises a first material consisting of one of PEEK, PI and an alloy that includes PAI, as claimed.

Regarding claims 10 and 12, the website http://www.craftechind.com/material.htm (dated January 20, 1998) discloses that an alloy that includes polyimide (PAI) (i.e., reinforced Torlon) is a material with a combination of assets that make it a **good substitute for metal**. See enclosed printout of this website. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an alloy that includes polyimde (PAI) rather than the metal disclosed in Togashi in the region of the tilt part, because this alloy that includes polyimide (PAI) a material with a combination of assets that make it a good substitute for metal, as taught by the website http://www.craftechind.com/material.htm (dated January 20, 1998).

Moreover, numbered paragraph [0102] of Togashi discloses that since the support part (6) has a **complicated shape**, it is preferable that the support part (6) is integrally molded of a synthetic resin, and all of the listed second materials ABS, POM, PBT and PC in claim 10 are synthetic resins. However, Togashi does not explicitly disclose that the support part comprises a second material consisting of one of ABS, POM, PBT and PC.

The article entitled "Application of Engineering Plastic Materials to Office Automation and Audio-Visual Appliances in Japan" discloses that polycarbonate (PC) is has small molding shrinkage, which makes it suitable for parts that require **high shaping precision**. See e.g., page 7 of this article. It would have been obvious to one of ordinary skill in the art at the time the invention was made, to provide the apparatus of U.S. Patent Publication No. 2002/0036377 with a support part that is made of PC,

because PC is suitable for parts that require high shaping precision such as the complicated shape of the support part, as taught by the article entitled "Application of Engineering Plastic Materials to Office Automation and Audio-Visual Appliances in Japan". Thus, all of the limitations of claims 10 and 12 are met.

4. Claims 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0036377 (Togashi) in view of the website http://www.tplast.ee/plast10en.php (dated August 27, 2002), and further in view of the article entitled "Application of Engineering Plastic Materials to Office Automation and Audio-Visual Appliances in Japan".

Regarding claim 10, Figs. 11-13 and 53 of Togashi show a sheet feed apparatus (30), including

a sheet feed roller (4) in pressing contact with an uppermost sheet of a plurality of sheets; and

a tilt member (including 6 and 9) opposing the sheet feed roller (4), the tilt member (including 6 and 9) including

a tilt part (9), and

a support part (6), the tilt part (9) including

a contact face (9b) in direct contact (see e.g., Fig. 12) with the sheet feed roller (4), and

a tilt face (9a) in contact with an edge of the uppermost sheet.

Also, Togashi discloses that the tilt part (9) comprises a first material (numbered paragraph [0108]) and the support part (6) comprises a second material (numbered paragraph [0102]) different from the first material. More specifically, Fig. 13 and numbered paragraphs [0114]-[0115] of Togashi provide a general teaching of the advantages of using a different material (e.g., metal) in the region where the tilt part (9) than the support part (6) (synthetic resin), because the tilt part is **susceptible to abrasion**. However, Togashi does not explicitly disclose that the tilt part (9) comprises a first material consisting of one of PEEK, PI and an alloy that includes PAI, as claimed.

Regarding claims 10 and 14, the website http://www.tplast.ee/plast10en.php (dated August 27, 2002) discloses that PEEK (e.g., PEEK-HPV) has guaranteed high mechanical strength, low coefficient of friction and amended **abrasion resistance**. See enclosed printout of this website. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide PEEK plastic rather than the metal disclosed in Togashi in the region of the tilt part, because plastic is a well known substitute for reducing manufacturing cost. Moreover, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use PEEK plastic as the different material in the region of the tilt part to achieve abrasion resistance, as taught by the website http://www.tplast.ee/plast10en.php (dated August 27, 2002).

Moreover, numbered paragraph [0102] of Togashi discloses that since the support part (6) has a **complicated shape**, it is preferable that the support part (6) is integrally molded of a synthetic resin, and all of the listed second materials ABS, POM,

PBT and PC in claim 10 are synthetic resins. However, Togashi does not explicitly disclose that the support part comprises a second material consisting of one of ABS, POM, PBT and PC.

The article entitled "Application of Engineering Plastic Materials to Office Automation and Audio-Visual Appliances in Japan" discloses that polycarbonate (PC) is has small molding shrinkage, which makes it suitable for parts that require **high shaping precision**. See e.g., page 7 of this article. It would have been obvious to one of ordinary skill in the art at the time the invention was made, to provide the apparatus of U.S. Patent Publication No. 2002/0036377 with a support part that is made of PC, because PC is suitable for parts that require high shaping precision such as the complicated shape of the support part, as taught by the article entitled "Application of Engineering Plastic Materials to Office Automation and Audio-Visual Appliances in Japan". Thus, all of the limitations of claims 10 and 14 are met.

5. Claims 10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0036377 (Togashi) in view of the website http://www.polymerplastics.com/performance_vespel.shtml (dated August 16, 2000), and further in view of the article entitled "Application of Engineering Plastic Materials to Office Automation and Audio-Visual Appliances in Japan".

Regarding claim 10, Figs. 11-13 and 53 of Togashi show a sheet feed apparatus (30), including

a sheet feed roller (4) in pressing contact with an uppermost sheet of a plurality of sheets; and

a tilt member (including 6 and 9) opposing the sheet feed roller (4), the tilt member (including 6 and 9) including

a tilt part (9), and

a support part (6), the tilt part (9) including

a contact face (9b) in direct contact (see e.g., Fig. 12) with the sheet feed roller (4), and

a tilt face (9a) in contact with an edge of the uppermost sheet.

Also, Togashi discloses that the tilt part (9) comprises a first material (numbered paragraph [0108]) and the support part (6) comprises a second material (numbered paragraph [0102]) different from the first material. More specifically, Fig. 13 and numbered paragraphs [0114]-[0115] of Togashi provide a general teaching of the advantages of using a different material (e.g., metal) in the region where the tilt part (9) than the support part (6)(synthetic resin), because the tilt part is **susceptible to abrasion**. However, Togashi does not explicitly disclose that the tilt part (9) comprises a first material consisting of one of PEEK, PI and an alloy that includes PAI, as claimed.

Regarding claims 10 and 15, the website http://www.polymerplastics.com/performance_vespel.shtml (dated August 16, 2000) discloses that PI (e.g., Vespel-Polyimide) retains its outstanding creep, **abrasion**

**resistance**, and strength under adverse conditions. See enclosed printout of this website. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide PI plastic rather than the metal disclosed in Togashi in the region of the tilt part, because plastic is a well known substitute for reducing manufacturing cost. Moreover, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use PI plastic as the different material in the region of the tilt part to achieve outstanding abrasion resistance, as taught by the website http://www.polymerplastics.com/performance_vespel.shtml (dated August 16, 2000).

Moreover, numbered paragraph [0102] of Togashi discloses that since the support part (6) has a **complicated shape**, it is preferable that the support part (6) is integrally molded of a synthetic resin, and all of the listed second materials ABS, POM, PBT and PC in claim 10 are synthetic resins. However, Togashi does not explicitly disclose that the support part comprises a second material consisting of one of ABS, POM, PBT and PC.

The article entitled "Application of Engineering Plastic Materials to Office Automation and Audio-Visual Appliances in Japan" discloses that polycarbonate (PC) is has small molding shrinkage, which makes it suitable for parts that require **high shaping precision**. See e.g., page 7 of this article. It would have been obvious to one of ordinary skill in the art at the time the invention was made, to provide the apparatus of U.S. Patent Publication No. 2002/0036377 with a support part that is made of PC, because PC is suitable for parts that require high shaping precision such as the

complicated shape of the support part, as taught by the article entitled "Application of Engineering Plastic Materials to Office Automation and Audio-Visual Appliances in Japan". Thus, all of the limitations of claims 10 and 15 are met.

***Response to Arguments***

6. Applicant's arguments filed 4/27/07 have been fully considered but they are not persuasive.

Applicant argues

> In Togashi, the tilt member 6, including the contact face, is integrally molded of a synthetic resin.[1] In at least the third through fifth embodiments of Togashi, the contact face of the integrally molded tilt member is covered by a metal plate or carbon/glass fiber reinforced hard synthetic resin and in contact with a sheet feed roller.[2]
> Because the contact face of the third through fifth embodiments of Togashi is covered with a metal cover, this contact face is not in direct contact with the sheet roller as recited in Applicant's Claim 1. Thus, the third through fifth embodiments of Togashi are not equivalent to the claimed invention. However, in at least the first and second embodiments of Togashi, the contact face is not covered by a metal plate and is in direct contact with the sheet roller. Thus, the question regarding Claim 1 is whether the first and second embodiments of Togashi which do disclose a contact face in direct contact with a sheet roller also disclose or suggest a tilt face and the contact face that are made of a first material consisting of one of polyethylene (PE), and polybutylene terephthalate (PBT), while ***the tilt*** member main body is made of a second material different from the first material. A review of Togashi reveals that the first and second embodiments of Togashi do not disclose or suggest the invention of Claim 1. That is, Togashi is explicit that the tilt member 6, including the contact face, is *integrally molded* of a synthetic resin. Because of the integrally molding, the tilt member of the first and second embodiments of Togashi does not include a tilt face and the contact face that are made of a first material consisting of one of polyethylene (PE), and polybutylene terephthalate (PBT), while ***the tilt member main body*** is made of a second material different from the first material.
> Indeed, not only does Togashi fail to disclose or suggest a tilt member main body is made of a second material different from a first material, but Togashi *explicitly teaches away* from this feature. That is, all of the embodiments of Togashi require that the component in question be

> *integrally molded*. Upon reading Togashi, one skilled in the art would not be motivated to replace the integrally molded tilt member, with Applicants' claimed construction. On the contrary, upon reading Togashi, one skilled in the art would be motivated to consider various integrally molded solutions.
> For at least the foregoing reasons, Togashi does not disclose or suggest an apparatus where a contact face is made up of one synthetic material and a tilt face is made by another synthetic material as recited in amended Claim 1.

In response, claim 1 of the instant application recites, "said tilt member including a tilt member body, a contact face in direct contact with the sheet feed roller, and a tilt face in contact with an edge of the uppermost sheet". There is no requirement for the contact face or the tilt face to be part of the tilt member body. Rather, the contact face and/or the tilt face can be disposed on a member that is separate from the tilt member body. Figs. 11-13 of Togashi show a contact face (9b) and a tilt face (9a) on a separate member (9) coupled to a tilt member body (6), and the contact face (9b) is in direct contact with a sheet feed roller (4). Thus, this arrangement of Togashi is equivalent to the claimed invention. Also, Figs. 11-13 and numbered paragraphs [0114] – [0115] of Togashi disclose that the material (i.e., metal) of the tilt face (9a) and contact face (9b) is different from the material (plastic) of the tilt member body (6) of Togashi, because the area where element 9 (i.e., the metal part) is located is susceptible to abrasion. In other words, Togashi teaches that is desirable to make the tilt face and contact face from a different material than that of the tilt member body. The secondary references (i.e., SDPLASTICS and Yasufuku) then provide motivation for making the tilt face and contact face of Togashi from specific types of plastic (e.g., PE and PBT) for the purpose of obtaining good abrasion resistance characteristics, while also reducing manufacturing

cost by making the contact face and tilt face from plastic rather than metal. Thus, all of the limitations of claim 1 and its dependent claims are met by these references.

Next, applicant argues

> For at least the reasons presented above relative to Claim 1, Togashi also does not disclose or suggest an apparatus having tilt member including a tilt part and a support part each made up of different synthetic materials as recited in Claim 10.
> The Official Action points to the third through fifth embodiments of Togashi for a supposed disclosure of the dual-material construction recited in Claims 1 and 10. Applicants traverse. Indeed, Togashi does disclose using first and second materials. However, while the first material of Togashi is an unspecified synthetic material, the second material is a metal. Thus, Togashi does not disclose or suggest using two different synthetic materials as recited in independent Claim 10. Applicant's claimed multi-synthetic material device has superior abrasion resistance and manufacturing cost advantages. Furthermore, as noted above relative to Claim 1, the third through fifth embodiments of Togashi require the use of a contact face metal cover. Thus, the third through fifth embodiments of Togashi do not disclose or suggest Applicants' claimed synthetic contact face *in direct contact with a sheet roller*. Indeed, because of manufacturing costs and performance issues associated with a) the integrally molded tilt member; and b) an integrally molded tilt member with a contact face metal cover, the inventors experimented and discovered a novel and useful alternative to the structures of Togashi. That is, with Applicants' claimed dual material structures having a synthetic material in direct contact with the sheet roller, the claimed invention has improved costs and performance over the integrally molded tilt member without a contact face metal cover, without the costs and complexity of an integrally molded tilt member having a contact face metal cover.
> SDPLASTICS describes various properties of polyethelyene (PE), including abrasion resistance. CRAFTECHIND describes Torlon® as a polyamide-imide (PAI) that possesses a combination of great mechanical strength, the ability to withstand radiation, usability from approximately -300°F to 500°F, and resistance to most chemicals at room temperature. CRAFTECHIND also discusses PE and PEEK. TPLAST describes polyetheretherketone PEEK as having great mechanical strength, stiffness and solidity, a very high allowed working temperature (250...310 °C), creep limit and abrasion resistance. VESPEL describes a high-performance polyimide (PI) resin as having outstanding creep, abrasion resistance, and strength under adverse conditions. Yasufuku discloses

> that PBT has a superior surface hardness property.
> Applicant submits that SDPLASTICS, CRAFTECHIND, TPLAST, VESPEL, and Yasufuku also does not cure the deficiencies of Togashi because each of these references fail to disclose or suggest the multi-material structures recited in Claims 1 and 10.

In response, claim 10 of the instant application recites, "a tilt part, and a support part, said tilt part including a contact face in direct contact with the sheet feed roller, and a tilt face in contact with an edge of the uppermost sheet". Thus, the contact face and the tilt face are included on a tilt part that can be separate from the support part. Figs. 11-13 of Togashi show a tilt part (9) with a contact face (9b) and a tilt face (9a) and a support part (6), and also show that the contact face (9b) is in direct contact with a sheet feed roller (4). Thus, this arrangement of Togashi is equivalent to the claimed invention. Also, Figs. 11-13 and numbered paragraphs [0114] – [0115] of Togashi disclose that the material (i.e., metal) of the tilt part (9) is different from the material (plastic) of the support part (6) of Togashi, because the area where the tilt part (9) (i.e., metal part) is located is susceptible to abrasion. In other words, Togashi teaches that is desirable to make the tilt part (9) from a different material than that of the support part (6). With regard to claims 10 and 12, the secondary references (i.e., CRAFTECHIND and Yasufuku) then provide motivation for making the tilt part (9) and the support part (6) of Togashi from PAI and PC plastics, respectively, because PAI is a good substitute for the metal used in the tilt part (9) of Togashi, and PC offers high shaping precision for the complicated shape of the support part (6) of Togashi.

Moreover, with regard to claims 10 and 14, the secondary references (i.e., TPLAST and Yasufuku) provide motivation for making the tilt part (9) and the support

part (6) of Togashi from PEEK and PC plastics, respectively, because PEEK offers good abrasion resistance characteristics, while also reducing manufacturing cost by using plastic rather than metal for the tilt part (9) of Togashi, and PC offers high shaping precision for the complicated shape of the support part (6) of Togashi.

In addition, with regard to claims 10 and 15, the secondary references (i.e., VESPEL and Yasufuku) provide motivation for making the tilt part (9) and the support part (6) of Togashi from PI and PC plastics, respectively, because PI offers good abrasion resistance characteristics, while also reducing manufacturing cost by using plastic rather than metal for the tilt part (9) of Togashi, and PC offers high shaping precision for the complicated shape of the support part (6) of Togashi. Thus, the above noted combinations of references provide motivation for making the tilt part (9) and the support part (6) from two different plastics, as claimed. Also, Togashi shows that the contact face (9b) is in direct contact with a sheet feed roller (4), as set forth in claim 10. Thus, all of the limitations of claim 10 and its dependent claims are met by these references.

Next, applicant argues

> MPEP 2144.08 describes that rebuttal evidence may include evidence that the claimed invention yields unexpectedly improved properties or properties not present in the prior art. Here, as discussed below, it is only through Applicant's extensive experimentation that the benefits of the claimed multi-material construction, as compared to other synthetic resins and integrally molded devices, were identified. That is, in an experiment documented in Applicant's specification and related to the invention recited in Claim 1, it was shown that a tilt face and contact face formed from PE or PBT demonstrated superior wear resistance because faces made of these materials did not fall bellow the non-feed line L until about 110,000 sheets have been printed. In contrast, faces formed from PC did

not demonstrate good wear resistance as the tilt member fell below the non-feed line when about 10,000 sheets were printed. Therefore, experimental results showed that superior performance is achieved if at least the tilt face 56a and the contact face 56b are formed from PE or PBT.

In an experiment documented in Applicant's specification and related to the invention recited in Claim 10, it was shown that conditions were similar to the conditions of the previously discussed experiment except that the tilt member was formed from one of aluminum (A1), poly-ether-ether-ketone (PEEK), polyimide (PI), or an alloy that includes polyimide (PAI). In FIG. 9, the line B is the empirically determined non-feed line corresponding to 0.2 mm wear from the initial thickness. These experiments showed that a tilt member formed from the above-listed material has excellent wear resistance because the tilt member did not fall bellow the non-feed line until about 1,000,000 sheets. Therefore, these experiments show that the second embodiment has better wear resistant than the first embodiment and may be more cost-effective for use in tilt members in high-duty cycle, large sheet feed apparatus. In other embodiments demonstrating excellent wear resistance, a glass fiber or another material can be added to the PBT, PE, Metal, PEEK, or PI. In yet other embodiments, alloys that include PBT, PE, Metal, PEEK, or PI can also be used.

MPEP 2144.08 describes that a showing of unexpected results for a single member of a claimed subgenus, or a narrow portion of a claimed range would be sufficient to rebut a *prima facie* case of obviousness *if* a skilled artisan "could ascertain a trend in the exemplified data that would allow him to reasonably extend the probative value thereof." *In re Clemens*, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980) (Evidence of the unobviousness of a broad range can be proven by a narrower range when one skilled in the art could ascertain a trend that would allow him to reasonably extend the probative value thereof.). But see, *Grasselli*, 713 F.2d at 743, 218 USPQ at 778 (evidence of superior properties for sodium containing composition insufficient to establish the non-obviousness of broad claims for a catalyst with "an alkali metal" where it was well known in the catalyst art that different alkali metals were not interchangeable and applicant had shown unexpected results only for sodium containing materials); *In re Greenfield*, 571 F.2d 1185, 1189, 197 USPQ 227, 230 (CCPA 1978) (evidence of superior properties in one species insufficient to establish the non-obviousness of a subgenus containing hundreds of compounds); *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972) (one test not sufficient where there was no adequate basis for concluding the other claimed compounds would behave the same way). However, an exemplary showing may be sufficient to establish a reasonable correlation between the showing and the entire scope of the claim, when viewed by a skilled artisan. See, e.g., *Chupp*, 816 F.2d at

> 646, 2 USPQ2d at 1439; *Clemens*, 622 F.2d at 1036, 206 USPQ at 296. Here, Applicant's testing provides evidence of unexpected results of certain species of synthetic resin in multi-material components as compared to other species of synthetic resin in integrally molded components.[4] More generally, Applicant's testing provides evidence of unexpected results of certain species of synthetic resin as compared to the genus of synthetic resins. Also, Applicant's testing provides evidence of manufacturing benefits (cost vs. long term wear) of devices where the contact face and tilt face are made of a specific (higher performance, more expensive) synthetic material, while the tilt member main body is made of another (lower cost) material. That is, because the tilt face and contact face are subject to abrasion, while the tilt member main body is not, it is advantageous to forego the integral molding taught by Togashi in favor of the multi-material construction recited in Claims 1 and 10.

In response, MPEP, section 716.01(c) states, "Objective evidence which **must** be factually supported **by an appropriate affidavit or declaration** to be of probative value includes **evidence of unexpected results**, commercial success, solution of a long-felt need, inoperability of the prior art, invention before the date of the reference, and allegations that the author(s) of the prior art derived the disclosed subject matter from the applicant." (emphasis added). Since applicant has not presented evidence in the proper form of an affidavit or declaration, applicant's evidence does **not** have any probative value.

Moreover, claims 1 and 10 both include Markush groups with **several** different plastics that can be used for the tilt face, contact face, tilt member main body, tilt part and support part. Thus, applicant has not limited claims 1 and 10 to **only one** material that could possibly have unexpected results. Rather, claims 1 and 10 each include **several different materials that can be used** for the tilt face, contact face, tilt member main body, tilt part and support part. MPEP, section 803.02 states, "The member of the Markush group (A, B and C in the example above) ordinarily **must** belong to a

recognized physical or chemical class or to an art-recognized class. However, when the Markush group occurs in a claim reciting a process or a combination (not a single compound), it is sufficient if the members of the group are disclosed in the specification to possess at least one property in common which is mainly responsible for their function in the claimed relationship, and it is clear from their very nature or from the prior art that all of them possess this property." Thus, according to MPEP, section 803.02, the different materials listed in the Markush Groups of claims 1 and 10 **must be similar to one another**. Thus, it is the examiner's position that these materials are interchangeable and there is no unexpected result from using one of these materials, as compared to using any of the other materials in these Markush groups. Furthermore, the secondary references (e.g., SDPLASTICS, Yasufuku, CRAFTECHIND, VESPEL and TPLAST) disclose that all of the claimed materials (e.g., PE, PBT, PEEK, PI, and an alloy including PAI) are well known. Since these materials are well known and are interchangeable, applicant has not provided convincing arguments to show unexpected results for the materials set forth in claims 1 and 10.

In addition, applicant's evidence to show unexpected results, which is taken from the specification of the instant application, is **not** limited to **a single** material that stands out as having unexpected results. Rather, such evidence explains the good wear resistance properties for **several** different materials (including PE, PBT, aluminum, PEEK, PI and alloys that include polyimide (PAI)). See e.g., pages 7-10 of applicant's response of 4/27/2007. Regarding claim 1, applicant explained that **either PE or PBT** demonstrates superior wear resistance. See e.g., pages 7-8 of applicant's amendment

of 4/27/07. For claim 10, applicant explained that **aluminum, PEEK, PI, or an alloy that includes polyimide (PAI)** demonstrates excellent wear resistance. Thus, any of these different materials can be used. See e.g., page 8 of applicant's amendment of 4/27/07. As such, it is the examiner's position that these materials are interchangeable and there is no unexpected result from using one of these materials, as compared to using any of the other materials in these Markush groups. Furthermore, the secondary references (e.g., SDPLASTICS, Yasufuku, CRAFTECHIND, VESPEL and TPLAST) disclose that all of these materials (e.g., PE, PBT, PEEK, PI, and an alloy including PAI) are well known. Since these materials are well known and are interchangeable, applicant has not provided convincing arguments to show unexpected results for the materials set forth in claims 1 and 10.

***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas A. Morrison whose telephone number is (571) 272-7221. The examiner can normally be reached on M-F, 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Mackey can be reached on (571) 272-6944. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

7/9/2007

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